



Sex and age group differences in the intakes and dietary sources of vitamin B12 in nationally representative samples of children (5–12y) and teenagers (13–18y) in Ireland

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Vitamin B12 has a major role in the health of the central nervous system including the development of brain and nerve cells. Previous research has shown that while intakes of vitamin B12 in children and teenagers in Ireland were adequate, the key sources of vitamin B12 were animal-based products and so continued surveillance of vitamin B12 intakes in these population groups is necessary due to the rise in popularity of plant-based diets⁽¹⁾. The aim of this study was to further investigate sex and age group differences in the intakes and dietary sources of vitamin B12 in children and teenagers in Ireland.

Analyses are based on data from two nationally representative nutrition surveys of children and teenagers in the Republic of Ireland; the National Children's Food Survey II (NCFS II) (2017–18; 5–12y; *n* 600) and National Teens' Food Survey II (NTFS II) (2019–20; 13–

18y; *n* 428) (www.iuna.net). Dietary intake data were collected using 4-day weighed food records. Usual intakes of vitamin B12 (μg & $\mu\text{g}/10\text{MJ}$) were calculated via the NCI-method using SAS© Enterprise Guide⁽²⁾. Analyses were conducted using SPSS© V28. The dietary sources of vitamin B12 were calculated using the mean proportion method⁽³⁾. Statistical differences between sexes and age groups (NCFS II: 5–8y vs 9–12y; NTFS II: 13–15y vs 16–18y) were determined using parametric tests (due to large sample size) with differences identified as $p < 0.001$ (adjusted for multiple testing).

For both children and teenagers, boys had higher intakes (mean \pm SD) of vitamin B12 ($5.1 \pm 1.9\mu\text{g}$ and $6.5 \pm 2.8\mu\text{g}$, respectively) than girls ($4.2 \pm 1.6\mu\text{g}$ and $4.6 \pm 2.2\mu\text{g}$, respectively). Energy-adjusted intakes were also higher in boys ($7.8 \pm 2.6\mu\text{g}/10\text{MJ}$ and $7.7 \pm 3.1\mu\text{g}/10\text{MJ}$, respectively) than girls ($7.1 \pm 2.5\mu\text{g}/10\text{MJ}$ and $7.0 \pm 2.8\mu\text{g}/10\text{MJ}$, respectively). For both children and teenagers, older children had higher intakes of vitamin B12 ($4.7 \pm 1.9\mu\text{g}$ and $5.9 \pm 2.8\mu\text{g}$, respectively) than younger age groups ($4.6 \pm 1.8\mu\text{g}$ and $5.2 \pm 2.5\mu\text{g}$, respectively). Energy-adjusted intakes were also higher in older teenagers compared to younger teenagers (7.5 ± 3.0 vs $7.2 \pm 2.9\mu\text{g}/10\text{MJ}$), however, younger children had higher energy-adjusted intakes than older children (7.9 ± 2.6 vs $7.0 \pm 2.5\mu\text{g}/10\text{MJ}$). There were no differences between sex and age groups in the dietary sources of vitamin B12 for children or teenagers with the following food groups contributing similar proportions across groups: 'milks' (21–34%), 'meat & meat products' (20–30%), 'breakfast cereals' (7–13%), 'eggs & egg dishes' (5–7%), 'fish & fish dishes', (5–6%), 'cheeses' (5% across all) and 'grains, rice, pasta & savouries' (3–6%).

These findings show that for both children and teenagers, boys consumed a more vitamin B12 dense diet compared to girls and that younger children consumed a more vitamin B12 dense diet compared to older children, conversely, older teenagers consumed a more vitamin B12 dense diet than younger teenagers. Considering changing dietary patterns regarding health and environmental sustainability, continued monitoring among these vulnerable population groups will be important.

Acknowledgments

The National Children's Food Survey II and the National Teens' Food Survey II were funded by the Irish Department of Agriculture, Food and the Marine.

References

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